

Appendix A-1
Federal Aviation Administration (FAA)

FAA-1	WSP	Weather Systems Processor
FAA-2	MIAWS	Medium Intensity Airport Weather System
FAA-3	TDWR	Terminal Doppler Weather Radar
FAA-4	ADDS	Aviation Digital Data Service
FAA-5	CIP	Current Icing Potential
FAA-5A	FIP	Forecast Icing Potential
FAA-6	ITA	In-Situ Turbulence Algorithm
FAA-7	GTG	Graphical Turbulence Guidance
FAA-8	NCWF	National Convective Weather Forecast
FAA-9	MSFS	Maritime Stratus Forecast System
FAA-10	TCWF	Terminal Convective Weather Forecast
FAA-11	WSDDM	Weather Support to Ground De-Icing Decision Making
FAA-12	WVSS	Water Vapor Sensing System
FAA-13	FISDL	Flight Information Services Data Link
FAA-14	MDCRS	Meteorological Data Collection and Reporting System
FAA-15	ITWS	Integrated Terminal Weather System
FAA-16	WARP	Weather and Radar Processor
FAA-17	CDMNeT	Collaborative Decision Making Network
FAA-18	WMSCR	Weather Message Switching Center Replacement
FAA-19	OASIS	Operational and Supportability Implementation System
FAA-20	OCTH	Oceanic Cloud Top Height Product
FAA-21	OCD	Oceanic Convective Diagnosis Product
FAA-22	OCN	Oceanic Convective Nowcast Product
FAA-23	TFO	Turbulence Forecast, Oceanic
FAA-24	VACT	Volcanic Ash Coordination Tool
FAA-25	AWOS/ASOS	Automated Weather Observing System/Automated Surface Observing System
FAA-26	LLWAS	Low Level Wind Shear Alert System
FAA-27	RUC	Rapid Update Cycle Model
FAA-28	ADAS	AWOS Data Acquisition System
FAA-29	RCWF	Regional Convective Weather Forecast Product
FAA-30	SBID	Satellite-Based Icing Detection Product
FAA-31	GRIDS	Ground-Based Remote Icing Detection System
FAA-32	CIWS	Corridor Integrated Weather System
FAA-33	RTDA	Radar Turbulence Detection Algorithm
FAA-34	RVR	Runway Visual Range
FAA-35	NCV	National Ceiling and Visibility Product
FAA-36	TCV	Terminal Ceiling and Visibility Product
FAA-37	JAWS	Juneau Airport Wind System
FAA-38	PA	Polarization Algorithm
FAA-39	CA	Circulation Algorithm
FAA-40	MRC	Multi-Radar Composites
FAA-41	SF-21	Safe Flight 21
FAA-42	SAWS	Stand Alone Weather Sensors
FAA-43	VA	Volcanic Ash Product
FAA-44	FLW	Flight Level Winds

Weather Systems Processor (WSP)

PROGRAM/PROJECT: Terminal Business Service

LEAD AGENCY: Federal Aviation Administration (FAA)

LEAD AGENCY POC: Dan Kinder, FAA-ATB-400, 202-267-7198, dan.kinder@faa.gov

PROGRAM POC: Dan Strawbridge, FAA/ATO-T-SSE, 202-385-8671, dan.strawbridge@faa.gov

SERVICE AREA/INITIATIVE

- *National Aviation Weather Initiatives:*
2: 5 6: 8

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY04 /FY05

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a modification to the existing airport surveillance radar (ASR-9) adding a processor to detect hazardous weather conditions in the terminal area. The WSP is being fielded at 34 non-Terminal Doppler Weather Radar (TDWR) airports.
- *How operations will be changed/improved:* better detection of hazardous wind shear and microburst events near airport runways. The unit will also detect and predict the arrival of gust fronts and storm cells. This improved capability will enhance both air traffic safety and efficiency.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Federal Acquisition Management System Program/Project Management Plan for the Weather Systems Processor.
- *Program's verification process:* The WSP has been subjected to all of the normally required programmatic reviews, from development of the specification and statement of work to operational test and evaluation. The system was developed through a prototype development process for many years. During this developmental time, input from the operational users in the field was constantly evaluated and then incorporated into the system design.
- *Method used for end product validation:* As part of the National Aerospace System, the WSP will be routinely certified by FAA technicians.
- *Operational training for the user:* Training has been developed for WSP by the FAA Academy and is delivered on site by Academy instructors in a formal classroom environment.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* All systems commissioned by end of FY 04.
- *Program becomes operational:* WSP is an operational system.
- *Plans for further improvements:* N/A

Medium Intensity Airport Weather System (MIAWS)

PROGRAM/PROJECT: Terminal Business Service

LEAD AGENCY: Federal Aviation Administration (FAA)

LEAD AGENCY POC: Diane Pino, FAA-ATO-T, 202-385-8593, diane.pino@faa.gov

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SERVICE AREA/INITIATIVE

- *National Aviation Weather Initiatives:*
6: 8

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 FY/06 /FY07

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a weather processing system that incorporates new weather algorithms, human interfaces, and available NEXRAD data to provide precipitation intensity, storm motion, and storm motion predictions for smaller airports. The Medium Intensity Airport Weather System (MIAWS) is planned for installation at 40 Low Level Wind Shear Alert System (LLWS) sites. MIAWS will be used at airports which will not receive either the Terminal Doppler Weather Radar or the Weather Systems Processor.
- *How operations will be changed/improved:* Provides accurate/timely storm intensity information without the need for interpretation or intensive training. The availability of this information will enhance the safety of operations, especially when used in conjunction with wind shear and microburst information available from the LLWS.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Federal Acquisition Management System Program/Project Management Plan for the Medium Intensity Airport Weather System.
- *Program's verification process:* This program is being prototyped at MIT Lincoln Laboratory's Memphis facility in order to use the Integrated Terminal Weather System (ITWS) installed there. This provides a real time, "truth" type comparison of its output. Prototypes have also been installed at the Jackson, MS, Springfield, MO, and Little Rock AR airports, and are currently in use under the authority of a NAS change proposal.
- *Method used for end product validation:* As discussed above, the end product (storm intensity and motion) has been compared to the ITWS. The results of this comparison indicated that the MIAWS performance was as expected and was of a high enough quality to proceed to the prototype installation at the Jackson, MS airport.
- *Operational training for the user:* The training for users at Jackson, MS was provided by MIT/LL personnel. Training format and content for operational personnel, should the system be fielded, has not yet been determined.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* TBD
- *Program becomes operational:* TBD
- *Plans for further improvements:* TBD

Terminal Doppler Weather Radar (TDWR)

PROGRAM/PROJECT: Terminal Business Service

LEAD AGENCY: Federal Aviation Administration (FAA)

LEAD AGENCY POC: Dan Kinder, FAA-ATB-400, 202-267-7198, dan.kinder@faa.gov

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SERVICE AREA/INITIATIVE

- **National Aviation Weather Initiatives:**
2: 5 6: 8

FUNDING

- **Programmed/Planned (\$'s/FY):** /FY04 /FY05

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- **What's being developed, procured, etc.:** doppler weather radar for installation at 45 high activity airports.
- **How operations will be changed/improved:** better detection of wind parameters indicating convective microbursts, gust fronts, and wind shifts and the capability to disseminate radar derived, real-time, wind warnings and advisories.

PROGRAM/PROJECT MANAGEMENT

- **Basic guidance document for this program:** Federal Acquisition Management System Program/Project Management Plan for the Terminal Doppler Weather Radar
- **Program's verification process:** This program complied with all applicable agency requirements during design, acquisition, and implementation.
- **Method used for end product validation:** This system is routinely certified by FAA technicians.
- **Operational training for the user:** Training is delivered to site personnel, at the site training facility, by FAA Academy instructors in a classroom environment.

SCHEDULE/IMPLEMENTATION

- **Next major program milestone:** N/A
- **Program becomes operational:** TDWR is an operational system.
- **Plans for further improvements:** A Service Life Extension Program (SLEP) is currently being implemented. This SLEP will significantly extend the useful life of the system.

Aviation Digital Data Service (ADDS)

PROGRAM/PROJECT: Aviation Weather Research Program/Aviation Forecasts Product Development Team
[<http://adds.aviationweather.gov>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA), National Oceanic and Atmospheric Administration (NOAA) and the National Center for Atmospheric Research (NCAR)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, Gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Lynn Sherretz, NOAA (FSL), 303-497-5580, lynn.sherretz@noaa.gov

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 1 2: 1 3: 1 5: 1 7: 2

FUNDING

- *Programmed/Planned (\$'s/FY):* / FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.: an internet (web based) weather information service.* ADDS is a digital database that enables aviation end-users, including airlines, general aviation, and dispatchers, to acquire automated aviation weather information for hazards such as icing, turbulence and convection. The ADDS Flight Path Tool provides horizontal depictions as well as vertical cross sections of aviation weather hazards along user specified flight paths.
- *How operations will be changed/improved: enables aviation end-users to acquire aviation weather warnings and forecasts, observations, and a variety of alphanumeric and graphical products via the internet.* ADDS helps reduce delays and enhance safety and efficiency of the National Airspace System by increasing the shared situational awareness among aviation decision makers through accurate and timely graphical weather information.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Aviation Forecasts Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and Quarterly Reporting, Program Reviews, Research, Engineering and Development Advisory Committee assessments.
- *Method used for end product validation:* Real Time Verification System (RTVS) and real-time user feedback.
- *Operational training for the user:* Training tutorials for the Flight Path Tool as well as other products can be found on the ADDS web site; <http://adds.aviationweather.gov>.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* ADDS became operational at the Aviation Weather Center on Sept 30, 2003.
- *Plans for further improvements:* Improve and upgrade operational and experimental ADDS with new products, improved data delivery mechanisms, and advanced interface and display capabilities.

Current Icing Potential (CIP)

PROGRAM/PROJECT: Aviation Weather Research Program/ In-Flight Icing Product Development Team
[<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR) and National Oceanic and Atmospheric Administration (NOAA)

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PROGRAM POINT OF CONTACT: Marcia Politovich, NCAR, 303-497-8449, marcia@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
5: 1, 11

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* an automated product graphically displaying current diagnosis of icing potential using information from several sources including satellite imagery, the Rapid Update Cycle (RUC) model, surface observations, NEXRAD data, and pilot reports.
- *How operations will be changed/improved:* integration of operational model output with real-time sensor data will produce improved automated in-flight icing products such as depictions of in-flight icing potential with higher vertical and horizontal resolution.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* In-Flight Icing Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* The Real-Time Verification System (RTVS).
- *Operational training for the user:* Hands-on training provided for Aviation Weather Center forecasters. On-line information available via the ADDS web site; <http://adds.aviationweather.gov>.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* 1QFY05 operational decision for the 20km CIP.
- *Program becomes operational:* CIP went operational on March 27, 2002.
- *Plans for further improvements:* FY06 operational decision to add icing severity to CIP.

Forecast Icing Potential (FIP)

PROGRAM/PROJECT: Aviation Weather Research Program/ In-Flight Icing Product Development Team
[<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/ National Center for Atmospheric Research (NCAR) and National Oceanic and Atmospheric Administration (NOAA)

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SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
5: 1, 8, 10

FUNDING:

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.: an automated, graphical product of forecast icing potential out to 12 hours using information from the Rapid Update Cycle (RUC) model.*
- *How operations will be changed/improved: integration of operational model output with real-time sensor data will produce improved automated in-flight icing products such as forecasts of in-flight icing potential with higher vertical and horizontal resolution.*

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PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* In-Flight Icing Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Verification of product improvements via the real-time verification system.
- *Operational training for the user:* Hands-on training provided for Aviation Weather Center (AWC) forecasters. On-line information available via the ADDS web site; <http://adds.aviationweather.gov>.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* 1QFY05- experimental decision for the FIP Alaska product.
- *Program becomes operational:* The FIP product became operational in March 2004.
- *Plans for further improvements:* FY07- add supercooled large drop (SLD) capability. FY08- add icing severity.

In-Situ Turbulence Algorithm (ITA)

PROGRAM.PROJECT: Aviation Weather Research Program/Turbulence Product Development Team
[<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR)

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SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
2: 4 7: 1, 5

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a software package to enable commercial aircraft to automatically measure (quantitatively) turbulence and automatically downlink the information in real time.
- *How operations will be changed/improved:* improved accuracy of turbulence observations will improve the forecasting of turbulence and help reduce injuries associated with turbulence encounters.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Turbulence Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations.
- *Method used for end product validation:* Algorithm tuning, flight simulator testing, and flight testing.
- *Operational training for the user:* Hands on training is provided for Aviation Weather Center forecasters.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Implement the algorithm on 172 commercial aircraft by end of FY05.
- *Program becomes operational:* The capability to down link turbulence information is currently operational.
- *Plans for further improvements:* Continue the implementation and validation of the in-situ turbulence algorithm on airline partner commercial aircraft, including United Airlines, Northwest Airlines, American Airlines, Southwest Airlines, and Delta Airlines.

Graphical Turbulence Guidance (GTG)

PROGRAM/PROJECT: Aviation Weather Research Program/Turbulence Product Development Team
[<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR) and National Oceanic and Atmospheric Administration (NOAA) Forecast Systems Laboratory (FSL)

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SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
7: 10

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* the capability to combine model output, in-situ measurements, and pilot reports within an artificial intelligence system to produce an automated, graphical forecast of upper level jet stream/frontal clear air turbulence that is supplemental AIRMETs and SIGMETs.
- *How operations will be changed/improved:* allow aircraft to avoid areas of turbulence and therefore reduce injuries caused by unexpected encounters with turbulence.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Turbulence Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Verification of product improvements via the real-time verification system.
- *Operational training for the user:* Hands-on training is provided to Aviation Weather Center Forecasters. Information on GTG available on ADDS web site; <http://adds.aviationweather.gov>.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* 1QFY06 operational decision for GTG FL100-200.
- *Program becomes operational:* GTG FL200+ became operational in March 2003 for meteorologists and dispatchers.
- *Plans for further improvements:* Continuing research will add other operational turbulence features, such as mountain wave turbulence (FY08) and convectively induced turbulence (FY10).

National Convective Weather Forecast (NCWF)

PROGRAM.PROJECT: Aviation Weather Research Program/Convective Weather Product Development Team, [http://www.faa.gov/aua/awr/]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA), the National Center for Atmospheric Research (NCAR), and MIT/LL

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PROGRAM POINT OF CONTACT: Cindy Mueller, NCAR, 303-497-8485, mueller@ncar.edu; Marilyn Wolfson, MIT LL, 781-981-3409, mwolfson@ll.mit.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
2: 10, 11

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* 0-6 hr automated, graphical, conus-scale convective weather forecast product including thunderstorm initiation, growth, and decay (2 hour forecast using expert systems; 6 hour forecast using model output).
- *How operations will be changed/improved:* will supplement the Aviation Weather Center's Convective SIGMET program and will improve forecasts of convective activity resulting in a safer and more efficient National Air Space System.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* FAA Convective Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Verification of product improvements via the real time verification system.
- *Operational training for the user:* Hands-on training provided for aviation weather center forecasters. On-line information available via the ADDS web site; http://adds.aviationweather.gov.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* FY05- decision to begin testing the echo tops enhancement.
- *Program becomes operational:* The 1-hr NCWF became operational in September 2001.
- *Plans for further improvements:* An operational 2-hour product in FY07, echo tops in FY10, and an operational 6-hr product in FY11.

Marine Stratus Forecast System (MSFS)

PROGRAM/PROJECT: Aviation Weather Research Program/Terminal Ceiling & Visibility Product Development Team [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/Massachusetts Institute of Technology, Lincoln Laboratory (MIT/LL), National Center for Atmospheric Research (NCAR)

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PROGRAM POINT OF CONTACT: Dave Clark, MIT/LL, 781-981-3684, davec@ll.mit.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 11

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a 1-6 hour automated, graphical consensus forecast of the marine stratus burn-off for the San Francisco International Airport using improved sensing of key atmospheric parameters, dynamic atmospheric modeling, and forecasting rules.
- *How operations will be changed/improved:* allows for real time planning of the resumption of parallel aircraft approaches to maximize capacity.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Terminal Ceiling and Visibility Product Development Team Technical Direction.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; and technical/human factors/user assessments.
- *Method used for end product validation:* evaluation by Center Weather Service Unit forecasters, assessment by the FAA W.J. Hughes Technical Center
- *Operational training for the user:* Hands-on training provided for Center Weather Service Unit and Weather Forecast Office forecasters as well as other users.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* The MSFS has been transitioned to the NWS and no additional work is planned in FY05.
- *Program becomes operational:* The MSFS transitioned to NWS in June 2004 and became operational in September 2004.
- *Plans for further improvements:* Transfer to NWS.

Terminal Convective Weather Forecast (TCWF)

PROGRAM.PROJECT: Aviation Weather Research Program/Convective Weather Product Development Team, [http://www.faa.gov/aua/awr/]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/Massachusetts Institute of Technology, Lincoln Laboratory (MITLL), National Center for Atmospheric Research (NCAR)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Marilyn Wolfson, MIT/LL, 781-981-3409, mwolfson@ll.mit.edu; Cindy Mueller, NCAR, 303-497-8485, mueller@ncar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
2: 7, 12

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* an automated 1- hr graphical forecast of convection for selected, high density terminal areas for FAA traffic managers.
- *How operations will be changed/improved:* provides vital convective weather information to air traffic managers for their use in air traffic flow management decision making to improve the safety and efficiency of the Nation's air traffic operations.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Convective Weather Product Development Team Technical Direction.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; and technical/human factors/user assessments.
- *Method used for end product validation:* Tested at Dallas/Ft. Worth, Orlando, New York, and Memphis airports.
- *Operational training for the user:* Hands-on training provided for terminal area users.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *When program will become operational:* FY06- Install TCWF at operational ITWS sites.
- *Plans for further improvements:* N/A

Weather Support to Decision Making (WSDM)

PROGRAM/PROJECT: Aviation Weather Research Program/Winter Weather Product Development Team
[<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA) and the National Center for Atmospheric Research (NCAR)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Roy Rasmussen, NCAR, 303-497-8430, rasmus@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- **National Aviation Weather Initiatives:**
4: 1, 3, 4, 5, 6

FUNDING

- | | | | |
|--|-------|-------|-------|
| • Programmed/Planned (\$'s/FY): | /FY05 | /FY06 | /FY07 |
|--|-------|-------|-------|

TYPE OF PROGRAM/APPLICATION

Product Improvement/Decision Support

SCOPE OF PROGRAM/PROJECT

- **What's being developed, procured, etc.:** automated, long- term forecasts for the WSDM integrated weather system.
- **How operations will be changed/improved:** WSDM provides vital information on weather parameters integral to the ground de-icing and airport surface clearing decision making process.

PROGRAM/PROJECT MANAGEMENT

- **Basic guidance document for this program:** Winter Weather Research Product Development Team Technical Direction and Seven Year Plan.
- **Program/Project verification process:** Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; and technical/human factors/user assessments.
- **Method used for end product validation:** Reconstruction of freezing/frozen precipitation events after major storms
- **Operational training for the user:** Hands-on training is provided by the private vendor who is marketing the system. The system is user friendly and requires no previous meteorological background to operate.

SCHEDULE/IMPLEMENTATION

- **Next major program milestone:** FY06 airport field test 6 hr forecasts.
- **Program becomes operational:** WSDM was operationally implemented by a private vendor in the NYC area in 2003.
- **Plans for further improvements:** Develop 12 hour forecasts of snow, freezing rain, ice pellets, snow pellets, frost, and freezing fog. Improve the performance of the hotplate precipitation gage for very low precipitation rates and high wind speed conditions.

Water Vapor Sensing System (WVSS)

PROGRAM/PROJECT: Aviation Weather Research Program [<http://www.ofps.ucar.edu/wvss>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/University Corporation for Atmospheric Research (UCAR) and the National Oceanic and Atmospheric Administration (NOAA)

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PROGRAM POINT OF CONTACT: Rex Fleming, UCAR, 303-497-8165, fleming@joss.ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 3 2: 4 5: 4, 6

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a sensor to automatically obtain and continuously downlink moisture data from commercial aircraft.
- *How operations will be changed/improved:* moisture data will be used in numerical weather models to improve the accuracy of all weather parameters including wind, temperature, in-flight icing, ceiling, and visibility forecasts.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* The guidelines for this project are documented in an FAA-UCAR cooperative agreement.
- *Program/Project verification process:* Quarterly reporting; semi-annual program reviews, Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; demonstrations and evaluations on air carrier aircraft.
- *Method used for end product validation:* Comparisons with rawinsonde observations and test sensors.
- *Operational training for the user:* Technical information is provided to numerical modelers who will incorporate the WVSS data into RUC, ETA, and other models.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* FY05- Technology transfer to NOAA.
- *Program becomes operational:* WVSS became operational in May 2004.
- *Plans for further improvements:* Install the second-generation atmospheric water vapor sensing system (WVSS-II) in commercial aircraft.

Flight Information Services Data Link (FISDL)

PROGRAM/PROJECT: <http://www1.faa.gov/aua/FISDL/>

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration

LEAD AGENCY POINT OF CONTACT: Rick Heuwinkel, FAA/ARS, 202-385-7702, richard.heuwinkel@faa.gov

PROGRAM POINT OF CONTACT: Alfred Moosakhanian, AUA460, 202- 267-9152, Alfred.Moosakhanian@faa.gov, Gary Stuteville, Honeywell, 913-712-5545, gary.stuteville@honeywell.com

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 2 2: 2 3: 3 5: 2 6: 2 7: 3 8: 2

FUNDING

- *Programmed/Planned (\$'s/FY):* No government funding provided.

TYPE OF PROGRAM/APPLICATION

Acquisition/Product Dissemination

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* VHF broadcast from a network of ground stations to in-cockpit displays of General Aviation aircraft, presenting nation-wide flight information products. FISDL implemented through joint FAA-industry agreement. FAA provides VHF frequency channels and management oversight to include review, acceptance and quality control of products transmitted. Industry installs and operates the ground data processing and transmission network at no cost to the FAA. Basic text products are provided to aircraft equipped to receive FISDL service at no cost; value-added graphic products are available through a subscription fee. Honeywell (Bendix/King) is the industry FISDL Service Provider.
- *How operations will be changed/improved:* provides general aviation pilots with updated weather information while airborne and thereby improves the safety and efficiency of general aviation flight operations.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Requirements, Technology and Concepts for Aviation (RTCA) Minimum Aviation Systems Performance Standards (MASPS) for Flight Information Services-Broadcast (FIS-B) Data Link (DO-267, March 27, 2001)
- *Program/Project verification process:* Managed by FAA FISDL Office, AUA-460
- *Method used for end product validation:* FAA conducts periodic quality assessments of the FISDL transmissions.
- *Operational training for the user:* Text training materials are developed by the FISDL service provider (Honeywell) and are available on their website.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* National coverage projected to be complete by CY04.
- *When program will become operational:* Operational service began in January 2002.
- *Plans for further improvements:* Continued development and enhancement of value-added graphical products, to include new products developed through the Aviation Weather Research Program.

Meteorological Data Collection and Reporting System (MDCRS)

PROGRAM/PROJECT: <http://www.arinc.com/products/weather/mdcrs.html>

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA), National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS)

LEAD AGENCY POINT OF CONTACT: Rick Heuwinkel, FAA/ARS-100, 202-385-7702, richard.heuwinkel@faa.gov

PROGRAM POINT OF CONTACT: Ms Sandra Schmidt, FAA/ARS-100, 202-366-4437, sandra.schmidt@faa.gov

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 3 2: 4 3: 2, 5, 6 5: 4, 6 6: 4

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY04

TYPE OF PROGRAM/APPLICATION

Operational Improvement/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.: the capability for appropriately equipped aircraft to automatically down link temperature, wind, and moisture data.*
- *How operations will be changed/improved: increases number of upper air observations being assimilated into numerical models thereby increasing forecast accuracy without increasing pilot workload.*

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Interface control document (ARINC).
- *Program/Project verification process:* Monthly reports, software testing (NWS).
- *Method used for end product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* MDCRS is currently operational.
- *Plans for further improvements:* Continue to implement this capability with additional airlines.

Integrated Terminal Weather System (ITWS)

PROGRAM/PROJECT: Terminal Business Service [<http://www2.faa.gov/ats/atb/sectors/weather/ITWS/>]

LEAD AGENCY/ COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Kevin Young, AUA-460, 202-366-9207, kevin.young@faa.gov

PROGRAM POINT OF CONTACT: Dan Strawbridge, FAA/ATO-T-SSE, 202-385-8671, dan.strawbridge@faa.gov

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 8 2: 7 6: 1, 6, 11

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY04 /FY05

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a safety and planning tool for terminal air traffic management personnel to obtain, process, and display current and predictive weather information (alphanumeric and graphical). Products generated by ITWS include windshear and microburst predictions, storm cell and lightning information, terminal area winds aloft, runway winds, and short term ceiling and visibility predictions.
- *How operations will be changed/improved:* the ITWS presents a graphic display of weather in the terminal area out to 200 miles for improved air traffic management decision making.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* ITWS Acquisition Program Baseline (APB), Operational Requirements Document (ORD).
- *Program/Project verification process:* FAA Acquisition Management System (AMS).
- *Method used for end product validation:* Pre-recorded weather scenarios are run on the system. If the system output is what is expected, the system is certified.
- *Operational training for the user:* Air Traffic and Airway Facility training will be conducted before site acceptance.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* ITWS is an operational system.
- *Plans for further product improvements:* P3I products planned to start in FY03 include: Dry Microburst and Sensor Data Quality Algorithms; NEXRAD Vertical Integrated Liquid water with large TRACON mosaic and NEXRAD open systems upgrades; Free Flight Phase II (FFP II) and Automation Systems Interfaces; Machine Intelligent Gust Front Algorithm (MIGFA) improvements; and Terminal Winds Forecast improvements.

Weather and Radar Processor (WARP)

PROGRAM/PROJECT: http://www2.faa.gov/aua/ipt_prod/weather/warp/

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA), National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS)

LEAD AGENCY POINT OF CONTACT: Kevin Young, AUA-460, 202-366-9207, kevin.young@faa.gov

PROGRAM POINT OF CONTACT: Alfred Moosakhanian, AUA-460, 202-267-9152, alfred.moosakhanian@faa.gov

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
N/A

FUNDING

- *Programmed/Planned (\$'s/FY):* \$13.8M /FY03 /FY04

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* an upgraded weather processor and workstation that receives and consolidates weather data from multiple sources (includes WSR-88D) into a single database. The Weather and Radar Processor (WARP) is being procured to provide an enhanced weather information capability for air traffic controllers, area supervisors, and Center Weather Service Unit meteorologists.
- *How operations will be changed/improved:* will analyze, generate and display specialized, value-added aviation weather products to support en-route air traffic control operations. Permits air traffic controllers to see aircraft and hazardous convective weather on the same scope

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* WARP Operational Requirements Document.
- *Program/Project verification process:* FAA Acquisition Management System (AMS) verification process.
- *Method used for end product validation:* Products are received from certified vendors or National Weather Service distribution.
- *Operational training for the user:* Equipment familiarization is provided prior to installation and operator training is provided during installation.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* WARP is an operational system.
- *Plans for further improvements:* Multifaceted product improvement plan has been implemented with this program.

Collaborative Decision Making Network (CDMNet)

PROGRAM/PROJECT: <http://www.metronavigation.com/cdm/products/cdmnet1.html>

LEAD AGENCY: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: James Wetherly, AUA-740, 703-326-3841, james.wetherly@faa.gov

PROGRAM POINT OF CONTACT: James Wetherly, AUA-740, 703-326-3841, james.wetherly@faa.gov

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 9 2: 8 5: 7 6: 5 7: 6 8: 3

FUNDING

- *Programmed/Planned (\$'s/FY):* CDMNet is independently funded and maintained through private industry. The only federal funding is the cost of maintaining and securing the demarcation access point from within the FAA and the cost associated with research, development and/or deployment and operation of existing and/or new weather information.

TYPE OF PROGRAM/APPLICATION

Operational Improvement/Product Dissemination

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a communication link which disseminates operational information (e.g., convective weather forecasts) between FAA and National Airspace System users for traffic flow management purposes.
- *How operations will be changed/improved:* improves dissemination of weather information to aviation users and air traffic managers for collaborative decision making regarding operations in the national airspace system.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* Information currently not available.
- *Method used for end product validation:* Information currently not available.
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* CDMNet is infrastructure that has been operational since 1997.
- *Plans for further improvements:* No specific plans at this point. Upgrading the network is primarily driven by industry forces.

Weather Message Switching Center Replacement (WMSCR)

PROGRAM/PROJECT: <http://www.aos.tc.faa.gov/aos500/AOS540/home.htm>

LEAD AGENCY: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Tammye Jenkins, ARS-100, 202-366-8073, tammye.jenkins@faa.gov

PROGRAM POINT OF CONTACT: Soncere Whitecloud, AOS-540, 609-485-8244

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
1: 9 2: 8 5: 7 6: 5 7: 6 8: 3

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY03 /FY04

TYPE OF PROGRAM/APPLICATION

Operational Improvement/Product Dissemination

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* a replacement for the single Weather Message Switching Center (WMSCR) that receives, processes and stores alphanumeric aviation weather products and disseminates these products to FAA and non-FAA users. It is the principal gateway to NWS, the DoD, and foreign countries for the exchange of weather data.
- *How operations will be changed/improved:* the two nodes of the WMSCR provide geographical redundancy and increase operational availability.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for end product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* WMSCR is an operational system.
- *Plans for further improvements:* N/A

Operational and Supportability Implementation System (OASIS)

PROGRAM/PROJECT: [<http://www.faa.gov/aua/oasis/>]

LEAD AGENCY/ COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Rudy Watkins, FAA/ATO-D, rudy.watkins@faa.gov

PROGRAM POINT OF CONTACT: Ron Richardson, FAA/ATO-D, 202-385-8415, ronald.richardson@faa.gov

SERVICE AREA(S)/INITIATIVE(S)

- ***National Aviation Weather Initiatives:***
1: 9 2: 8 5: 7 6: 5 7: 6 8: 3

FUNDING: (F&E Baseline)

- ***Programmed/Planned (\$'s/FY):*** /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:*** a commercial off-the-shelf/non-developmental item (COTS/NDI) system that enhances the air traffic specialist's ability to provide flight plan processing, weather briefing information, and search and rescue services in support of general aviation pilots. OASIS is being developed to eventually update weather operations workstations at 61 Automated Flight Service Stations.
- ***How operations will be changed/improved:*** The OASIS system will provide for on-going operational support, enabling flight service specialists to more efficiently provide weather and flight information for general aviation pilots. OASIS will provide significant improvement in the computer-human interface by replacing the existing consoles and providing displays with a graphical user interface.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** OASIS Integrated Program Plan.
- ***Program/Project verification process:*** Planned formal reviews for OASIS include: Test Readiness Reviews; a functional configuration audit (FCA); periodic system engineering reviews; technical exchange meetings (TEMs) as required; and, program management reviews (PMRs).
- ***Method used for end product validation:*** The scope of the OASIS T&E program encompasses all testing conducted during the OASIS program life cycle. The T&E program is comprised of the following phases: system test, IOT&E phase, field familiarization, and Final Operational Capability (FOC) acceptance T&E.
- ***Operational training for the user:*** The FAA Academy instructors will train a cadre of instructors for each site. Training for the qualified FSS specialists currently at the sites will be conducted by the site Cadre instructors between the time the equipment is deployed to the site and the site is commissioned. Classroom instruction, text materials, and hands-on training methods will be utilized. The contractor will conduct training for FAA maintenance technicians at each site during initial deployment.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** ISD005 software upgrade scheduled to begin January 2005.
- ***Program becomes operational:*** The In-Service Decision (ISD) for OASIS took place in June 2002.
- ***Plans for further improvements:*** 16 sites are installed and operational as of July 2004. Future installations are on hold pending the outcome of the AFSS A-76 decision (March 2005). The ISD005 software upgrade will incorporate, among other features, a direct connection to the US NOTAMs Server (USNS) that will enable OASIS to display ICAO, military and local NOTAMs, and will sort Temporary Flight Restrictions (TFRs) so that presidential and security TFRs are located at the top of the list..

Oceanic Cloud Top Height (OCTH)

PROGRAM/PROJECT: Aviation Weather Research Program/Oceanic Weather Product Development Team
[<http://www.rap.ucar.edu/projects/owpdt/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR), MIT/LL, Naval Research Laboratory, and the Aviation Weather Center

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Cathy Kessinger, NCAR/RAP, 303-497-8481, kessinger@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
2: 1

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION:

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* automated graphic showing height of clouds relative to flight level derived from infrared satellite imagery and corrected for non-standard atmospheric lapse rate.
- *How operations will be changed/improved:* Enhanced safety over oceanic and remote regions through high-resolution (space and time) alerting of hazard areas.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Oceanic Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Human (pilot) reporting; comparison to other satellite imagery; verification of algorithms over data-rich regions such as the Gulf of Mexico and CONUS.
- *Operational training for the user:* Text, hands-on, and distance learning (web-based).

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Decision for experimental use 3QFY05.
- *Program becomes operational:* FY07.
- *Plans for further improvements:* Integrate diagnostics and/or cloud classification algorithms that will more precisely distinguish convection from non-convective clouds.

Oceanic Convective Diagnosis (OCD)

PROGRAM/PROJECT: Aviation Weather Research Program/Oceanic Weather Product Development Team
[<http://www.rap.ucar.edu/projects/owpdt>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR), MIT/LL, Naval Research Laboratory, and the Aviation Weather Center

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Cathy Kessinger, NCAR/RAP, 303-497-8481, kessinger@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
2: 1

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION:

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* expert system framework that merges cloud top height, oceanic lightning, and cloud classification algorithms to produce an automated, true diagnosis of convection relative to flight level in remote/oceanic regions.
- *How operations will be changed/improved:* Enhanced safety over oceanic and remote regions through high-resolution (space and time) alerting of hazard areas.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Oceanic Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Human (pilot) reporting; comparison to other satellite imagery; verification of algorithms over data-rich regions such as the Gulf of Mexico and CONUS.
- *Operational training for the user:* Text, hands-on, and distance learning (web-based).

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Decision for experimental use 3QFY06.
- *Program becomes operational:* FY09.
- *Plans for further improvements:* Other data sets and diagnostics will be added as diagnostic skill is demonstrated (FY05 and beyond).

Oceanic Convective Nowcast (OCN)

PROGRAM/PROJECT: Aviation Weather Research Program/Oceanic Weather Product Development Team
[<http://www.rap.ucar.edu/projects/owpdt>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR), MIT/LL, Naval Research Laboratory, and the Aviation Weather Center

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Cathy Kessinger, NCAR/RAP, 303-497-8481, kessinger@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
2: 10

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION:

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* expert system framework that merges convective diagnosis, oceanic wind fields, data sets, and other algorithms to produce a 0-2 hour automated nowcast of convection relative to flight level in remote/oceanic regions.
- *How operations will be changed/improved:* Enhanced safety over oceanic and remote regions through high-resolution (space and time) alerting of hazard areas. Added ability to strategically plan around areas of convection at flight level.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Oceanic Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Human (pilot) reporting; comparison to other satellite imagery; verification of algorithms over data-rich regions such as the Gulf of Mexico and CONUS.
- *Operational training for the user:* Text, hands-on, and distance learning (web-based).

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Decision for developmental testing 1QFY06.
- *Program becomes operational:* FY10
- *Plans for further improvements:* Continued R&D leading to an operating prototype in the laboratory by the end of FY05. Continue to investigate techniques and algorithms that could support longer-range convective forecasts out to 15 hours.

Turbulence Forecast, Oceanic (TFO)

PROGRAM/PROJECT: Aviation Weather Research Program/ Oceanic Weather Product Development Team
[<http://www.rap.ucar.edu/projects/owpdt>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR), MIT/LL, Naval Research Laboratory, and the Aviation Weather Center

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Cathy Kessinger, NCAR/RAP, 303-497-8481, kessinger@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
7: 10

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION:

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* expert system framework that merges oceanic data sets, wind fields, and other algorithms to produce an automated 0-6 hour forecast of clear air turbulence (CAT) relative to flight level in remote/oceanic regions.
- *How operations will be changed/improved:* Enhanced safety over oceanic and remote regions through high-resolution (space and time) alerting of turbulence hazard areas.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Oceanic Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Human (pilot) reporting; comparison to other satellite imagery; verification of algorithms over data-rich regions such as the Gulf of Mexico and CONUS.
- *Operational training for the user:* Text, hands-on, and distance learning (web-based).

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Decision for experimental use (D3) 1QFY07.
- *Program becomes operational:* FY09
- *Plans for further improvements:* Future integration of convective induced turbulence (CIT) diagnostics as they are developed and tested.

Volcanic Ash Coordination Tool (VACT)

PROGRAM/PROJECT: Aviation Weather Research Program/Aviation Forecasts Product Development Team

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Oceanic and Atmospheric Administration (NOAA)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Lynn Sherretz, NOAA (FSL), 303-497-5580, lynn.sherretz@noaa.gov

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
8: 1

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION:

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* extend the current capabilities of the FX-Collaborate (FXC) and AWIPS systems to include volcanic ash data sets, dispersion models, and tools for generating volcanic ash products in order to meet the goal of creating a consistent set of advisories, which originate from different organizations. .
- *How operations will be changed/improved:* VACT will enable forecasters to simultaneously view identical displays of meteorological information and collaborate in real-time to generate fully-consistent time-critical advisories and forecasts for ash.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Aviation Forecasts Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Testing at the Alaska Volcanic Ash Advisory Center (VAAC), Center Weather Service Unit (CWSU), and Volcanic Observatory (AVO).
- *Operational training for the user:* Hands-on training for VAAC, CWSU, Volcanic Observatory personnel.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* FY05- implement new versions of VACT at the Anchorage VAAC, CWSU, and Volcanic Observatory.
- *Program becomes operational:* TBD
- *Plans for further improvements:* add additional satellite, radar, and dispersion model data sets to the VACT.

Automated Weather Observing System/Automated Surface Observing System (AWOS/ASOS)

PROGRAM/PROJECT: Terminal Business Service [<http://www2.faa.gov/asos/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Kevin Young, AUA-460, 202-366-9207, kevin.young@faa.gov

PROGRAM POC: Dan Strawbridge, FAA/ATO-T-SSE, 202-385-8671, dan.strawbridge@faa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
1: 7

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY04 /FY05

TYPE OF PROGRAM/APPLICATION

Product Improvement/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* a suite of sensors, which measures, collects and broadcasts weather data to help meteorologists, pilots and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for correct takeoffs and landings.
- *How will operations be changed/improved:* The system provides continuous data on conditions for the runway environment. The computer-generated voice broadcasts give pilots updates critical to safe landings.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* AWOS/ASOS is an operational system.
- *Plans for further improvements:* Continue sensor upgrades as technology permits.

Low Level Wind Shear Alert System (LLWAS) Improvements

PROGRAM/PROJECT: Terminal Business Service

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Dan Kinder, FAA-ATB-400, 202-267-7198, dan.kinder@faa.gov

PROGRAM POC: Dan Strawbridge, FAA/ATO-T-SSE, 202-385-8671, dan.strawbridge@faa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
6: 6

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY04 /FY05

TYPE OF PROGRAM/APPLICATION

Product Improvement/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* system improvements to better detect the presence of low level wind shear. LLWAS-Network Expansion (NE) is an upgraded system at 9 major airports; LLWAS-Relocation(R) improves performance by relocating or replacing poles impacted by wind shielding or sheltering conditions; LLWAS-Sustainment (S) extends the service life of the LLWAS systems located at 40 non-TDWR/WSP airports.
- *How will operations be changed/improved:* better detection of low level wind shear around airports will result in safer operations.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* LLWAS-NE and LLWAS-RS are operational systems.
- *Plans for further improvements:* N/A

Rapid Update Cycle (RUC) Model

PROGRAM/PROJECT: Aviation Weather Research Program/Model Development & Enhancements Product Development Team [<http://www1.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/ the National Oceanic and Atmospheric Administration (NOAA)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Steve Koch, NOAA/FSL, 303-497-5487, steven.koch@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
1: 11, 13 2: 11, 12 3: 7 6: 10

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* improvements to the RUC model that will allow better analyses and predictions of hazardous aviation impact variables.
- *How will operations be changed/improved:* improve safety of flight operations within the National Airspace System.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Model Development and Enhancements Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; technical/human factors/user assessments.
- *Method used for product validation:* Retrospective and real-time testing and comparison of results with observations.
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* To be replaced by the Weather Research Forecast model in 2007.
- *Program becomes operational:* RUC-20 became operational in 2002.
- *Plans for further improvements:* Higher resolution version of the RUC model consistent with enhancements to NCEP's computational resources. Incorporate model upgrades that improve cloud and moisture analyses and model physics that affects icing.

Automated Weather Observing System (AWOS) Data Acquisition System (ADAS)

PROGRAM/PROJECT:

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration

LEAD AGENCY POINT OF CONTACT:

PROGRAM POC: Dan Strawbridge, FAA/ATO-T-SSE, 202-385-8671, dan.strawbridge@faa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
1: 9 6: 5

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY03 /FY04

TYPE OF PROGRAM/APPLICATION

Dissemination

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* The AWOS Data Acquisition System (ADAS) collects automated surface observations from AWOSs and ASOSs within the ARTCC boundaries and distributes to selected FAA systems for further distribution. Automated lightning detection and reporting system (ALDARS) functions are implemented on the ADAS. The ADAS provides lightning data to enable the AWOSs and ASOSs to report on the range and direction of lightning and thunderstorm activity affecting an airport.
- *How will operations be changed/improved:*

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* All 22 ADAS systems are commissioned.
- *Plans for further improvements:* N/A

Regional Convective Weather Forecast (RCWF)

PROGRAM/PROJECT: Aviation Weather Research Program/Convective Weather Product Development Team, [http://www1.faa.gov/aua/awr/]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA) and the Massachusetts Institute of Technology, Lincoln Laboratory (MITLL)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Marilyn Wolfson, MIT/LL, 781-981-3409, mwolfson@ll.mit.edu; Cindy Mueller, NCAR, 303-497-8485, mueller@ncar.edu

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
N/A

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* a 2 hr product associated with the Corridor Integrated Weather System (CIWS) testbed.
- *How will operations be changed/improved:* See CIWS (FAA-40)

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Convective Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; and technical/human factors/user assessments.
- *Method used for product validation:* Developmental and operational testing and comparison of results with observations.
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* Currently no plans for the RCWF to become a stand alone operational product.
- *Plans for further improvements:* N/A

Satellite-Based Icing Detection (SBID)

PROGRAM/PROJECT: Aviation Weather Research Program,/In-Flight Icing Product Development Team,
[[<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/ National Aeronautics and Space Agency (NASA)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Marcia Politovich, NCAR, 303-497-8449, marcia@ucar.edu

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
N/A See FAA-6

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* this is a component of the Current Icing Potential (CIP) product (FAA-6).
- *How will operations be changed/improved:* satellite-based icing detection contributes to improved in-flight icing products for avoiding areas of potential icing.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* In-Flight Icing Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* The CIP product became operational in March 2002.
- *Plans for further improvements:* N/A

Ground-based Remote Icing Detection System (GRIDS)

PROGRAM/PROJECT: Aviation Weather Research Program,/Advanced Weather Radar Techniques Product Development Team, [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Oceanic and Atmospheric Administration (NOAA)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Kim Elmore, NOAA NSSL, 405-366-0458, kim.elmore@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
N/A

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* technology for the ground-based detection of in-flight icing using a microwave radiometer and a millimeter cloud radar.
- *How will operations be changed/improved:* provide the ability to avoid areas of icing, including Supercooled-Large Droplets (SLD), which pose a serious icing threat to en-route aircraft.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* In-Flight Icing and Advanced Weather Radar Techniques Product Development Team's Technical Direction and Seven Year Plans.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations.
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* decision for use
- *Program becomes operational:* GRIDS is primarily a research system and is intended for no more than limited operations.
- *Plans for further improvements:* N/A

Corridor Integrated Weather System (CIWS)

PROGRAM/PROJECT:

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Ray Moy, ATO-E, 202-385-8412, raymond.moy@faa.gov

PROGRAM POINT OF CONTACT: Ray Moy, ATO-E, 202-385-8412, raymond.moy@faa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
2: 1

FUNDING

- *Programmed/Planned (\$'s/FY):* \$4.0M/FY05 \$0 /FY06 \$0/FY07

TYPE OF PROGRAM/APPLICATION

Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* CIWS is a demonstration program which provides air traffic flow managers with accurate, automated, high update rate information on convective storm locations and echo tops, along with 2-hour animated growth and decay forecasts. The CIWS demonstration provides convective weather products to a total of fifteen FAA facilities (ARTCC and TRACON). The area of coverage is the high congestion corridor from Boston thru Minneapolis (east – west) and Boston thru Washington DC (north – south). CIWS also incorporates Canadian radar data to provide coverage on the northern playbook routes utilizing Canadian airspace.
- *How will operations be changed/improved:* Provides common situation awareness to all air traffic flow managers of convective activity in the high congestion corridor. This allows managers to improve efficient tactical use of the airspace, enhance delay reduction due to convective activity and potential to reduce controller workload.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* FAA Initial Investment Decision (to define program scope and schedule)
- *Program becomes operational:* TBD
- *Plans for further improvements:* TBD

Radar Turbulence Detection Algorithm (RTDA)

PROGRAM/PROJECT: Aviation Weather Research Program/Advanced Weather Radar Techniques Product Development Team [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR); National Oceanic and Atmospheric Administration (NOAA) National Severe Storms Laboratory (NSSL)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Bob Sharman, NCAR, 303-497-8457, sharman@ucar.edu; Kim Elmore, NOAA NSSL, 405-366-0458, kim.elmore@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
7: 12

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* capability to detect areas of primarily convectively induced turbulence from WSR-88D radar data.
- *How will operations be changed/improved:* allow aircraft to avoid areas of turbulence and therefore reduce injuries caused by unexpected encounters with turbulence.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Advanced Weather Radar Techniques Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; semi-annual program reviews; science panel reviews; NEXRAD Tri-Agency approval process.
- *Method used for product validation:* Validation of product improvements via comparison of output data with Pilot Reports and field testing using research aircraft.
- *Operational training for the user:* hands-on training.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* 4QFY05: RTDA decision meeting by the NEXRAD Technical Advisory Committee (TAC).
- *Program becomes operational:* FY07: Dependent on decision by the NEXRAD Program Management Committee (PMC).
- *Plans for further improvements:* Investigate potential for using RTDA with other terminal radars such as the TDWR, ASR-9, and ASR-11.

Next Generation Runway Visual Range (RVR)

PROGRAM/PROJECT: RVR Program Office [www.faa.gov/aua/aua700]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: James Wetherly, AUA-740, 703-326-3841, james.wetherly@faa.gov

PROGRAM POINT OF CONTACT:

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
1: 12

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY04

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* capability to collect RVR data from 48 major airports in near real-time and distribute to controllers and airline operation centers.
- *How will operations be changed/improved:* the ability to readily access real-time information provides enhanced traffic flow management collaborative decision making.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* System is currently operational.
- *Plans for further improvements:* RVR data will be collected from an additional 31 airports when these airports receive the New Generation RVR equipment.

National Ceiling and Visibility (NCV)

PROGRAM/PROJECT: Aviation Weather Research Program/National Ceiling and Visibility Product Development Team, [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Paul Herzegh, NCAR, 303-497-2820, herzegh@ucar.edu

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
1: 1

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* using an integrated approach, data from pilot reports, radar, satellites, surface observations, and numerical model output will be blended into automated C&V analysis and forecast products.
- *How will operations be changed/improved:* improved analyses and forecasts of ceiling and visibility will contribute to reduced general aviation accidents.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* National Ceiling and Visibility Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for product validation:* Verification of product improvements via the real-time verification system.
- *Operational training for the user:* Information on the C&V analysis product is available on ADDS web site; <http://adds.aviationweather.gov>.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Experimental decision for the CONUS analysis product in FY 05 and the forecast product experimental decision in FY 06.
- *Program becomes operational:* FY08.
- *Plans for further improvements:* Alaska analysis and forecast products in FY09.

Terminal Ceiling and Visibility (TCV)

PROGRAM/PROJECT: Aviation Weather Research Program/Terminal Ceiling & Visibility Product Development Team [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/MIT/LL

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Dave Clark, MIT/LL, 781-981-3684, davec@ll.mit.edu

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
1: 1

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* capability to provide automated forecasts for airports that have problems due to low ceilings and visibilities associated synoptic scale extratropical systems that frequent the northeast quadrant of the United States during the months of November through April.
- *How will operations be changed/improved:* allow air traffic operations to anticipate the real-time impact of winter storms on capacity to support strategic and tactical air traffic planning and on safety especially for General Aviation.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Terminal C&V Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* : Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for product validation:* Verification of product improvements via the real-time verification system.
- *Operational training for the user:* Hands-on training to be provided to traffic management personnel.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Use of the NYC Integrated Terminal Weather System as a test-bed for Northeast C&V trial products began in FY04.
- *Program becomes operational:* TBD
- *Plans for further improvements:* N/A

Juneau Airport Wind System (JAWS)

PROGRAM/PROJECT: Terminal Business Service [http://www2.faa.gov/aua/ipt_prod/weather/jaws.htm]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Kevin Young, ATO-E, 202-385-8502, kevin.young@faa.gov

POC: Dan Strawbridge, FAA/ATO-T-SSE, 202-385-8671, dan.strawbridge@faa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
N/A

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* a single-site system to address the unique severe weather patterns that adversely impact the Juneau, AK airport. . All components of the JAWS system will be commercial-off-the-shelf products. The JAWS sensors will be placed at various locations in the Juneau area, including on top of mountains
- *How will operations be changed/improved:* JAWS will increase safety in the Juneau area by providing turbulence and wind shear alerts to pilot.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* Initial operating capability by end of CY 2005. Fully operational in FY06.
- *Plans for further improvements:* N/A

Polarization Algorithm (PA)

PROGRAM/PROJECT: Aviation Weather Research Program/Advanced Weather Radar Techniques Product Development Team [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA),/National Oceanic and Atmospheric Administration (NOAA)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Kim Elmore, NOAA/NSSL, 405-366-0458, kim.elmore@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
2: 5 5: 6

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* algorithms based on polarimetry which will provide information about the volumetric extent of hail, freezing rain, snow, and icing conditions, as well as non-hydrometeor scatterers.
- *How will operations be changed/improved:* the biggest potential payoff is enhanced data quality. Polarimetric techniques will eliminate problems associated with sea-clutter, ground clutter, AP, and biological scatterers.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Advanced Weather Radar Techniques Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting and program reviews. As part of the NEXRAD Product Improvement Program, PA is reviewed by the Technical Advisory Committee and the System Recommendation and Evaluation Committee.
- *Method used for product validation:* Developmental and operational testing.
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Development of an algorithm specifically for discrimination between non-meteorological scatterers, including the ability to discriminate non-meteorological scatterers into chaff, avian, and insect categories.
- *Program becomes operational:* FY07
- *Plans for further improvements:* Investigate icing events and compare Polarimetric retrievals with model predictions and pilot reports.

Circulation Algorithm (CA)

PROGRAM/PROJECT: Aviation Weather Research Program/Advanced Weather Radar Techniques Product Development Team [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Oceanic and Atmospheric Administration (NOAA)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Kim Elmore, NOAA/NSSL, 405-366-0458, kim.elmore@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
2: 5

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* More robust and reliable circulation detection algorithms to improve the diagnosis of storm severity and longevity and to mitigate the problem of high false alarm rates for controllers.
- *How will operations be changed/improved:* reduce false alarm rate and improve the diagnosis of storm severity and longevity.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Advanced Weather Radar Techniques Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and Quarterly Reporting and Program Reviews. Review by the NEXRAD Technical Advisory Committee and the System Recommendation and Evaluation Committee.
- *Method used for product validation:* Developmental and operational testing.
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* NEXRAD Program Management Committee Technical Advisory Committee (TAC) meeting 1QFY05.
- *Program becomes operational:* FY06.
- *Plans for further improvements:* TBD

Multi-Radar Composites (MRC)

PROGRAM/PROJECT: Aviation Weather Research Program/Advanced Weather Radar Techniques Product Development Team [<http://www.faa.gov/aua/awr/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Oceanic and Atmospheric Administration (NOAA)

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Kim Elmore, NOAA/NSSL, 405-366-0458, kim.elmore@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
N/A

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* algorithms and techniques to develop and deliver a high-resolution 3D national radar mosaic that uses data from multiple radars. .
- *How will operations be changed/improved:* 3D gridded radar data will improve the initialization of numerical models resulting in improved analysis and forecast of aviation impact variables.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Advanced Weather Radar Techniques Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and Quarterly Reporting and Program Reviews. Review by the NEXRAD Technical Advisory Committee and the System Recommendation and Evaluation Committee.
- *Method used for product validation:* Developmental and operational testing.
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* FY 07
- *Plans for further improvements:* focus on scientific improvement of the national 3D mosaic including better quality control, gap-filling for "cone of silence" and data voids below the lowest beams, and the synchronization of multiple radar observations within the 3D mosaic.

Safe Flight 21 (SF-21) Capstone

PROGRAM/PROJECT: Safe Flight 21 [<http://www1.faa.gov/and/and500/510/510-home.html>]/Capstone
[<http://www.alaska.faa.gov/capstone/>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT:

PROGRAM POINT OF CONTACT: James McDaniel, AND-510, SF-21 Flight Safety Application Manager

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*

1: 2 2: 2 3: 3 5: 2 6: 2 7: 3 8: 2

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY04

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* Alaska demonstration program using data link technology to uplink/downlink flight information (including weather) and traffic information to Part 135 and Part 91 aircraft.
- *How will operations be changed/improved:* providing weather, traffic, and terrain information to the cockpit will result in safer and more efficient flight operations.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* N/A
- *Plans for further improvements:* N/A

Stand Alone Weather Sensors (SAWS)

PROGRAM/PROJECT: Terminal Business Service [http://www2.faa.gov/aua/ipt_prod/weather/saws.htm]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)

LEAD AGENCY POINT OF CONTACT: Kevin Young, ATO-E, 202-385-8502, kevin.young@faa.gov

POC: Dan Strawbridge, FAA/ATO-T-SSE, 202-385-8671, dan.strawbridge@faa.gov

SERVICE AREA(S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
1: 7 2: 5 4: 2 6: 6

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 FY/07

TYPE OF PROGRAM/APPLICATION

Acquisition/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc:* a system to serve as backup to ASOS at Service Level-C Air Traffic Control Towers, co-located Terminal Radar Approach Control facilities, and selected Automated Flight Service Stations. The SAWS sensor suite automatically collects, processes, and broadcasts surface weather data to air traffic controllers. Currently in the implementation phase with approximately 100 systems installed.
- *How will operations be changed/improved:* serve as backup to ASOS and replace aging sensors.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* N/A
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* N/A

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* N/A
- *Program becomes operational:* All installations complete by end of FY09.
- *Plans for further improvements:* N/A

Volcanic Ash (VA)

PROGRAM/PROJECT: Aviation Weather Research Program/Oceanic Weather Product Development Team
[<http://www.rap.ucar.edu/projects/owpdt>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR), MIT/LL, Naval Research Laboratory, and the Aviation Weather Center

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Cathy Kessinger, NCAR/RAP, 303-497-8481, kessinger@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
8: 1

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION:

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* automated tools to ingest and decode current ash advisories and SIGMETs, represent these graphically, and broaden their availability and distribution through inclusion in a first-generation, graphical, web-based volcanic ash warning product.
- *How operations will be changed/improved:* Enhanced safety over oceanic and remote regions through high-resolution (space and time) alerting of hazard areas. Added ability to strategically plan around areas of volcanic ash at flight level.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Oceanic Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* TBD
- *Operational training for the user:* TBD

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Decision for experimental use 1QFY07.
- *Program becomes operational:* FY09
- *Plans for further improvements:* TBD

Flight Level Winds (FLW)

PROGRAM/PROJECT: Aviation Weather Research Program/Oceanic Weather Product Development Team
[<http://www.rap.ucar.edu/projects/owpdt>]

LEAD AGENCY/COLLABORATING AGENCIES: Federal Aviation Administration (FAA)/National Center for Atmospheric Research (NCAR), MIT/LL, Naval Research Laboratory, and the Aviation Weather Center

LEAD AGENCY POINT OF CONTACT: Gloria Kulesa, FAA/AWRP, 202-267-7289, gloria.kulesa@faa.gov

PROGRAM POINT OF CONTACT: Cathy Kessinger, NCAR/RAP, 303-497-8481, kessinger@ucar.edu

SERVICE AREA(S)/INITIATIVE(S)

- *National Aviation Weather Initiatives:*
2: 10 3: 7 7:8 8:5

FUNDING

- *Programmed/Planned (\$'s/FY):* /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION:

R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* continue to exploit and expand on prior work done on spot winds derived from satellite data including IR, visible, and water vapor channels and explore the integration of derived 4-dimensional wind fields into future air traffic management systems.
- *How operations will be changed/improved:* improved winds needed for nowcasting convection, determining advection of volcanic ash, determining location and severity of clear air turbulence and convectively induced turbulence, traffic management decision support, and routine flight planning.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Oceanic Weather Product Development Team Technical Direction and Seven Year Plan.
- *Program/Project verification process:* Monthly and quarterly reporting; program reviews; Research, Engineering, and Development Advisory Committee program assessments; science panel reviews; use of test beds for demonstrations and evaluations; Aviation Weather Technology Transfer Board decisions; and technical/human factors/user assessments.
- *Method used for end product validation:* Compare results to observations.
- *Operational training for the user:* TBD

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* TBD
- *Program becomes operational:* TBD
- *Plans for further improvements:* TBD